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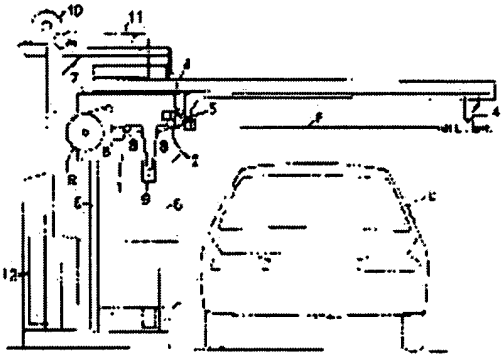
(54) DEVICE FOR STICKING PROTECTING FILM ONTO VEHICLE OR THE LIKE

(57)Abstract:
PURPOSE: To easily add quickly process a protecting film pasted up high efficient ly on a car body by drawing out the protecting film cut, and lowering down the cut protecting film with tension.
CONSTITUTION: First a protecting film F of a main roll R is drawn out and set so as to hold its point end to a film holding mechanism 2. Next, the held film F is drawn out to a specific position to run by supporting the point end of the film F by a film draw out mechanism 4. Next, the drawn out film, in a condition that fixed by a film holding mechanism 2, is supported to a film supporting transfer feed mechanism 5, to cut the film F by actuating a cut mechanism 3. Then, the film draw out mechanism 4 and the film supporting transfer feed mechanism 5 are synchronously advanced, moved to an upper position of a car body C, previously waiting in the specific position, and actuated to lower down after confirming positioning, to stick the protecting film, provided with tension between both itself and the car body, onto a roof or bonnet of the car body.



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CLAIMS

[Claim(s)]
[Claim 1] The tip of the protection film drawn from the original fabric roll The film maintenance device which can be held horizontally, The film withdrawal mechanism pulls out horizontally and it runs by the chuck in support of the tip of the protection film held by this film maintenance device, While supporting the base of the pulled-out protection film by the chuck, a film withdrawal mechanism and the film support transport station it can run in this direction, The cut device in which the protection film by which cash-drawer support was carried out is cut crosswise between a film maintenance device and a film support transport station, Protection film attachment equipment to the car characterized by having the elevator style which makes it go up and down the film withdrawal mechanism which stretched and had the cut protection film, and a film support transport station.

[Translation done.]

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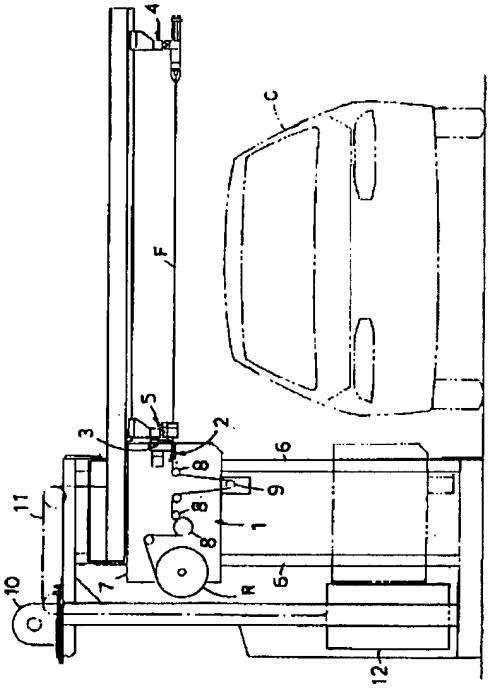
(54)【発明の名称】　車両等への保護フィルム貼付け装置

(57)【要約】

【目的】　車両の塗装面に保護フィルムを高能率で貼付けることのできる装置を提供する。

【構成】　原反ロールＲから導出した保護フィルムＦの先端を水平に保持するフィルム保持機構２と、前記保持された保護フィルムＦの先端を複数のチャック２８で支持して水平に引出し走行するフィルム引出し機構４と、引出された保護フィルムＦの基部の左右両端部をチャック３０で支持するとともにフィルム引出し機構４と同方向に走行可能なフィルム支持移送機構５と、引き出された保護フィルムＦをフィルム保持機構２とフィルム支持移送機構５との間で切断するカット機構３と、フィルム引出し機構４とフィルム支持移送機構５とを昇降させる機構とを装備し、引き出し切断した定尺の保護フィルムＦをフィルム引出し機構４とフィルム支持移送機構５とで張り持って下降させ、車両Ｃに貼付ける。



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【特許請求の範囲】

【請求項1】　原反ロールから導出した保護フィルムの先端を水平に保持可能なフィルム保持機構と、該フィルム保持機構で保持された保護フィルムの先端をチャックで支持して水平に引出し走行するフィルム引出し機構と、引出された保護フィルムの基部をチャックで支持するとともにフィルム引出し機構と同方向に走行可能なフィルム支持移送機構と、引出し支持された保護フィルムをフィルム保持機構とフィルム支持移送機構との間において幅方向に切断するカット機構と、切断した保護フィルムを張り持ったフィルム引出し機構とフィルム支持移送機構とを昇降させる昇降機構とを備えたことを特徴とする車両等への保護フィルム貼付け装置。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、完成した車両（主として乗用車）がユーザーに渡るまでの輸送および保管中に表面塗装が煤煙・埃・鉄粉さび・酸性雨などによる汚染、鳥虫糞による浸食、あるいは擦り傷などのダメージを受けるのを回避するために、車両のルーフ、ボンネットおよびトランクリッドなどに保護フィルムを貼付ける装置に関する。

【0002】

【従来の技術】従来、車両の表面塗装を一時的に保護する手段としてはパラフィンワックスを塗布するのが一般的であるが、保護機能が充分でないこと、および、パラフィンワックスを除去する場合には有機溶剤が必要となり、除去設備の排水規制に対応する必要があることなどの理由から、新しい保護手段の開発が望まれ、このような要望に対応して、車両の塗装面に貼付ける保護フィルムが開発されるに至った。

【0003】

【発明が解決しようとする課題】この保護フィルムは、旧来の保護剤塗布に比較して塗装保護機能が格段に高く、貼付けおよび剥離が簡単に行うことができ、かつ、除去作業工程を含むトータルコストが安価であり、その実用上の効果は多大であるが、フィルム貼付けが人手による（具体的には、フィルムの四隅を4人の作業者が把持して貼り付けている）ものであったために、フィルム貼付け作業性が低いものとなっていた。

【0004】本発明は、この保護フィルムを高能率で簡単迅速に車体に貼付け処理できる装置を提供することを目的としてなされたものである。

【0005】

【課題を解決するための手段】上記目的を達成するために、本発明は次のような構成を採る。すなわち、本発明に係る車両への保護フィルム貼付け装置は、原反ロールから導出した保護フィルムの先端を水平に保持可能なフィルム保持機構と、フィルム保持機構で保持された保護フィルムの先端をチャックで支持して水平に引出し走行

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するフィルム引出し機構と、引出された保護フィルムの基部をチャックで支持するとともにフィルム引出し機構と同方向に走行可能なフィルム支持移送機構と、引出し支持された保護フィルムをフィルム保持機構とフィルム支持移送機構との間において幅方向に切断するカット機構と、切断した保護フィルムを張り持ったフィルム引出し機構とフィルム支持移送機構とを昇降させる昇降機構とを装備してなる。

【0006】

【作用】先ず、原反ロールの保護フィルムを、その粘着面を下面にして導出して、その先端がフィルム保持機構で保持されるようにセットする。次に、フィルム保持機構で保持された保護フィルムの先端をフィルム引出し機構のチャックで支持し、フィルム保持機構を保持解除してフィルム引出し機構を所定位置まで引出し走行させる。次に、引出された保護フィルムを再びフィルム保持機構で固定保持した状態で、フィルム保持機構の直下手部位（保護フィルムの基部）をフィルム支持移送機構のチャックで支持し、カット機構を作動させてフィルム保持機構とフィルム支持移送機構との間で保護フィルムを切断する。これによって、フィルム引出し機構とフィルム支持移送機構との間に所定長さの保護フィルムが張り持たれることになる。次に、フィルム引出し機構とフィルム支持移送機構とを同調して前進させ、予め所定の位置に待機させてある車体の上方位置に移動させ、位置決めが確認された後下降作動させて、両者間に張り持たれた保護フィルムを車体のルーフ、あるいは、ボンネット上に貼付ける。フィルム貼付けが終わるとフィルム引出し機構とフィルム支持移送機構とはフィルム支持を解除して上昇し、フィルム支持移送機構は原点に復帰後退するとともに、フィルム引出し機構は次のフィルム引出しのためにフィルム保持機構に向けて後退走行する。

【0007】

【実施例】図1ないし図3は本発明に係る保護フィルム貼付け装置の一実施例の全体正面図、全体平面図、および、全体側面図である。この保護フィルム貼付け装置は、基本的にはフィルム供給部1、フィルム保持機構2、カット機構3、フィルム引出し機構4、フィルム支持移送機構5、および、これらの駆動機構から構成されている。

【0008】フィルム供給部1は、立設された一対のガイドレール6に沿って昇降可能な可動フレーム7に装備されており、原反ロールRから導出した保護フィルムFをガイドローラ8群およびダンサローラ9を介して案内して前記フィルム保持機構2に水平姿勢で供給するように構成されている。前記可動フレーム7はモータ10によって巻き上げおよび巻き下げ操作されるチェーン11の一端に連結され、また、このチェーン11の他端にはバランスウエイト12が連結されている。

【0009】フィルム保持機構2は、図4および図5に

示すように、前記可動フレーム７の前部において左右水平に横架固定された上部ガイド板１３と、これに対向する下部可動ガイド板１４とからなり、下部可動ガイド板１４を連結した揺動アーム１５をシリンダ１６によって揺動駆動することで、上部ガイド板１３と下部可動ガイド板１４の間に挿通した保護フィルムＦを挟持して水平に固定保持することができるように構成されている。また、図６に示すように、上部ガイド板１３と下部可動ガイド板１４の前縁複数箇所には切り欠き１７が形成されており、この切り欠き１７が後述するフィルム引出し機構４によるフィルム掴み箇所となっている。

【００１０】カット機構３は、図５および図６に示すように、上記フィルム保持機構２における上部ガイド板１３と下部可動ガイド板１４の前縁直前箇所の上方に配備されており、ガイドレール１８に沿って水平横移動可能な可動台１９にシリンダ２０を介して上下動可能にカッタホルダ２１を装着し、可動台１９に連結したベルト２２をモータ２３によって水平に正逆駆動回動することで、カッタホルダ２１に装着した切刃２４を正逆に水平移動させるように構成されている。

【００１１】フィルム引出し機構４およびフィルム支持移送機構５は、前記可動フレーム７から前方に片持ち状に延出したビーム２５に沿って前後動可能に装着されている。フィルム引出し機構４は、ビーム２５の下面に装備されたガイドレール２６に沿って移動可能な横長の可動枠２７に上下に開閉する３組のチャック２８を装備して構成されており、このチャック２８が前記フィルム保持機構２におけるガイド板１３，１４の前縁複数箇所に形成した切り欠き１７に対応して配置されている。

【００１２】また、フィルム支持移送機構５は、前記ガイドレール２６に沿って移動可能な横長の可動枠２９に上下に開閉する左右一対のチャック３０を左右に進退可能に装備して構成されており、このチャック３０が、フィルム引出し機構４によって引き出された保護フィルムＦの左右端を掴むように構成されている。

【００１３】なお、前記可動枠２７，２９はビーム２５内に巻回配備された２本のベルト（図示せず）に夫々連結されており、各ベルトを正逆に回動駆動することで、フィルム引出し機構４およびフィルム支持移送機構５を独立して前後進することができるようになっている。また、各チャック２８，３０には、掴んだ保護フィルムＦを張り持ち支持できるように弾性的に進退可能に構成されている。

【００１４】本実施例の保護フィルム貼付け装置は以上のように構成されたものであり、以下にそのフィルム貼付け作動を図７および図８に基づいて説明する。

（１）先ず、原反ロールＲから保護フィルムＦを導出してその先端をフィルム保持機構２に供給して上部ガイド板１３と下部可動ガイド板１４の間に挟持固定する。また、ビーム２５の下方所定位置に対象となる車両Ｃを配

備する。なお、ここで使用される保護フィルムＦの下面は粘着面となっている。

【００１５】（２）図７（ａ）に示すように、フィルム引出し機構４を後退移動（図上では左方移動）させる。

【００１６】（３）図７（ｂ）に示すように、フィルム保持機構２の切り欠き１７箇所において保護フィルムＦをチャック２８で掴ませる。

【００１７】（４）図７（ｃ）に示すように、下部可動ガイド板１４を下降させてフィルム挟持を解除し、フィルム引出し機構４を所定位置に向けて前進させる。

【００１８】（５）図８（ｄ）に示すように、所定長さのフィルム引出しが完了すると、下部可動ガイド板１４を上昇させて再び保護フィルムＦを挟持固定し、原点位置（最左方位置）にあるフィルム支持移送機構５の各チャック３０を対向進出させて、引き出された保護フィルムＦの基部左右端を掴ませるとともに、カット機構３のカッタホルダ２１を保護フィルム走行面より下方まで下降させた後、可動台１９を前進走行させて、フィルム保持機構２とフィルム支持移送機構５との間で保護フィルムＦを幅方向に切断する。これによって、フィルム引出し機構４とフィルム支持移送機構５ととの間に所定寸法の保護フィルムＦが張り持たれる。

【００１９】（６）図８（ｅ）に示すように、フィルム引出し機構４とフィルム支持移送機構５とを同調前進させて、待機している車両Ｃの上方に移動させる。

【００２０】（７）図８（ｆ）に示すように、車両Ｃに対する保護フィルムＦの位置決めがなされると、可動フレーム７を下降させて、フィルム引出し機構４とフィルム支持移送機構５とを同調下降させ、フィルム引出し機構４とフィルム支持移送機構５とに張り持たせた保護フィルムＦを車両Ｃのルーフあるいはボンネット上に貼付ける。

【００２１】（８）次に、フィルム引出し機構４とフィルム支持移送機構５の各チャック２８，３０の掴みを解除した後、可動フレーム７を元の高さまで上昇させるとともに、フィルム支持移送機構５を原点位置に復帰後退させる。

【００２２】以上で、１回の貼付け作動が完了し、以後上記作動を適当回数繰り返して、車両Ｃの所定箇所への保護フィルム貼付けを行う。上述の貼付け装置で車両Ｃに保護フィルムが貼り付けられた後、例えば先端部に回転ローラが弾性的に配備されたロボットアーム等を使って、フィルムの上を前記回転ローラで押圧することにより、保護フィルムと車両Ｃとの密着を完全なものにする。

【００２３】なお、上記実施例では、フィルム保持機構２でのフィルム固定保持手段として機械的な挟持方式を採用しているが、真空吸着方式とすることも可能である。また、フィルム引出し機構４とフィルム支持移送機構５の各チャック２８，３０を真空吸着方式で実施する

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ことも可能である。また、カット機構３の形態も、固定の切刃２４を走行させる方式の他に、円板切刃を走行させる方式、幅広の固定受刃に対して幅広の切刃を昇降させる剪断方式、熱線カット方式、等の各種切断方式を適宜選択して実施することができる。

【００２４】

【発明の効果】以上の説明から明らかなように、本発明によれば、保護フィルムの定尺引出し、切断、および、車体への貼付けを人手を必要とすることなく全自動で高能率で行うことができるようになった。

【図面の簡単な説明】

【図１】本発明に係る車両への保護フィルム貼付け装置の一実施例の全体正面図である。

【図２】実施例装置の全体平面図である。

【図３】実施例装置の全体側面図である。

【図４】要部の正面図である。

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【図５】フィルム保持機構とカット機構の側面図である。

【図６】フィルム保持機構とカット機構の要部斜視図である。

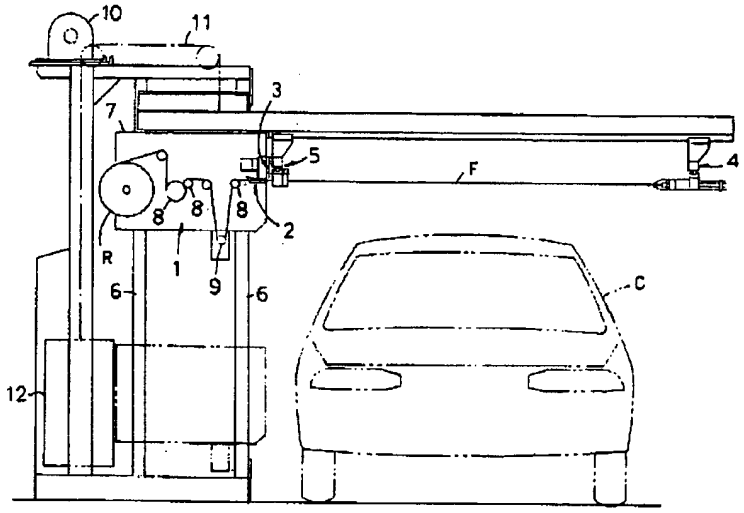
【図７】貼付け処理工程図である。

【図８】貼付け処理工程図である。

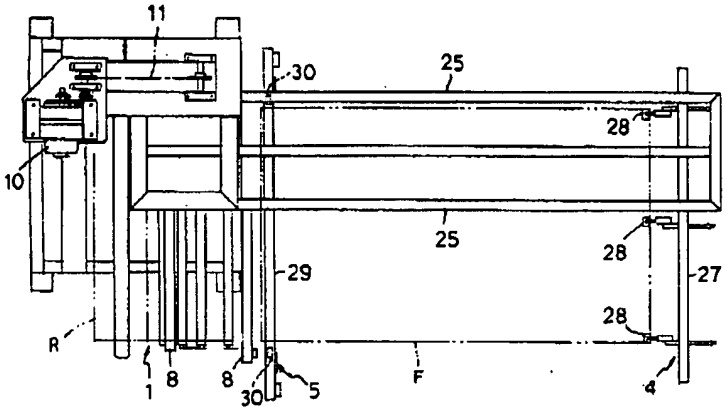
【符号の説明】

２　フィルム保持機構
３　カット機構
４　フィルム引出し機構
５　フィルム支持移送機構
２８　チャック
３０　チャック
Ｆ　保護フィルム
Ｒ　原反ロール

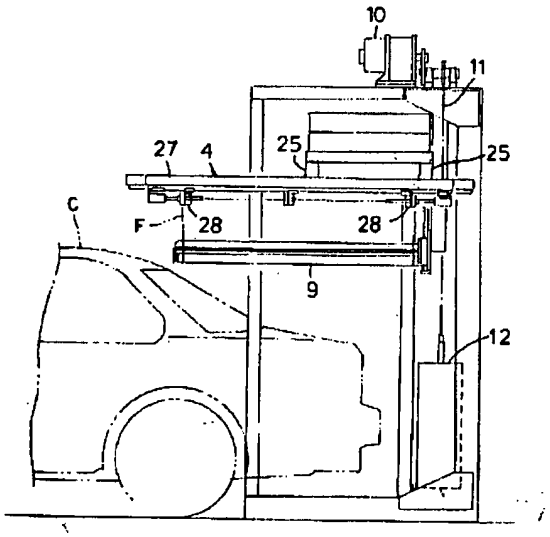
【図１】



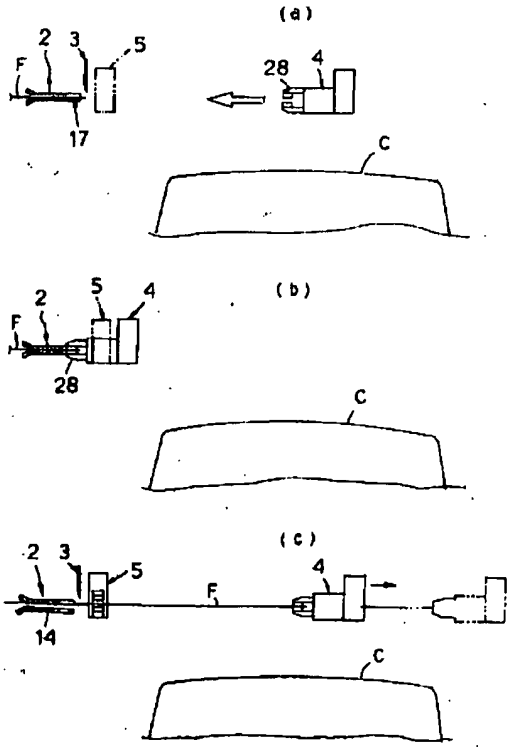
【図2】


11
30
25
28
10
25
28
29
27
28
R
1
8
8
30
5
F
4

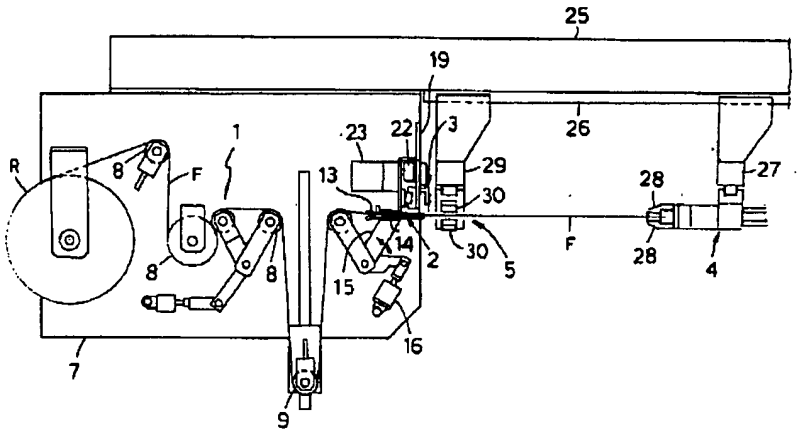
【図3】


10
11
27
4
25
25
C
F
28
28
9
12

【図7】


(a)
2
3
5
F
28
4
17
C
(b)
2
5
4
F
28
C
(c)
2
3
5
4
F
14
C

【図4】


25
19
26
1
23
22
3
R
8
F
13
29
27
28
30
14
2
30
5
F
28
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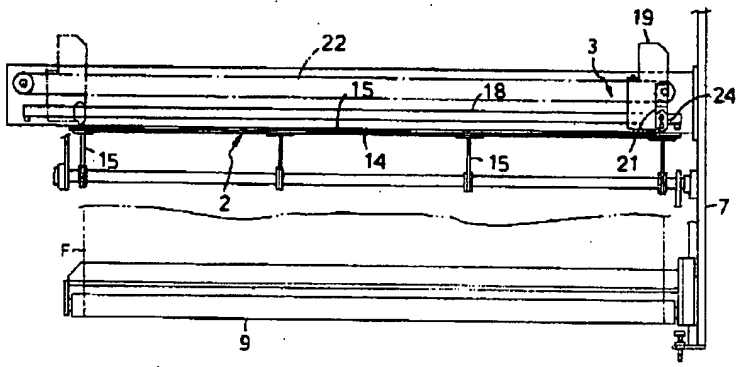
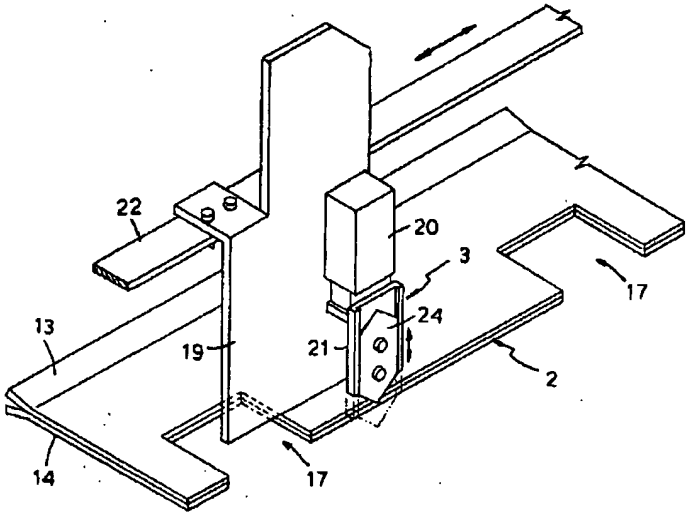
8
8
15
16
7
9

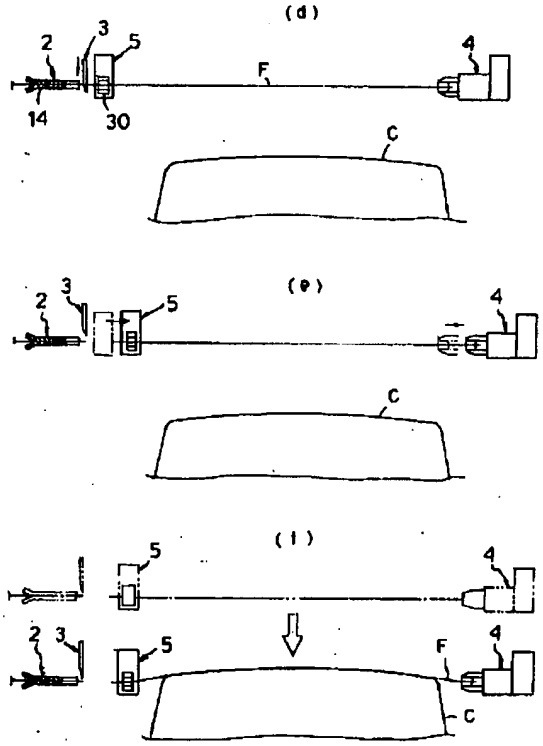
【図5】


19
22
3
15
18
24
15
14
15
21
2
7
F
9

【図6】



【図8】



DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the equipment which sticks a protection film on a roof, a bonnet, a trunk lid, etc. of a car, in order to avoid that surface coating receives damages, such as contamination by soot, dust, the iron powder rust, acid rain, etc., corrosion by ******, or an abrasion, during transportation until the completed car (mainly passenger car) passes into a user, and storage.
[0002]
[Description of the Prior Art] Although it was common to have applied paraffin wax as a means to protect surface coating of a car temporarily, conventionally, when a protection feature removed not enough and paraffin wax, the organic solvent was needed, development of a new safeguard is desired from the reasons of it being necessary to correspond to wastewater regulation of a removal facility etc., and the protection film stuck on the painted surface of a car came to be developed corresponding to such a request.
[0003]
[Problem(s) to be Solved by the Invention] although this protection film has an alike and high paint protection feature as compared with the conventional protective agent spreading, the total cost in which attachment and exfoliation can carry out easily, and include a removal routing is cheap and that practical effectiveness is great Since film attachment was what is depended on a help (four operators are specifically grasping and sticking the four corners of a film), film attachment workability became low.
[0004] This invention is made for the purpose of offering the equipment which can stick and process this protection film into a car body simply quickly in high efficiency.
[0005]
[Means for Solving the Problem] In order to attain the above-mentioned purpose, this invention takes the following configurations. Namely, the protection film attachment equipment to the car concerning this invention The tip of the protection film drawn from the original fabric roll The film maintenance device which can be held horizontally, The film withdrawal mechanism pulls out horizontally and it runs by the chuck in support of the tip of the protection film held by the film maintenance device, While supporting the base of the pulled-out protection film by the chuck, a film withdrawal mechanism and the film support transport station it can run in this direction, It comes to equip the elevator style which makes it go up and down the cut device in which the protection film by which cash-drawer support was carried out is cut crosswise between a film maintenance device and a film support transport station, and the film withdrawal mechanism which stretched and had the cut protection film and a film support transport station.
[0006]
[Function] First, it draws by using the adhesive face as an inferior surface of tongue, and the protection film of an original fabric roll is set so that the tip may be held by the film maintenance device. Next, the tip of the protection film held by the film maintenance device is supported by the chuck of a film withdrawal mechanism, and maintenance discharge of the film maintenance device is carried out, and it

is made to pull out and run a film withdrawal mechanism to a predetermined location. Next, where fixed maintenance of the pulled-out protection film is again carried out by the film maintenance device, the direct poor part (base of a protection film) of a film maintenance device is supported by the chuck of a film support transport station, a cut device is operated, and a protection film is cut between a film maintenance device and a film support transport station. Between a film withdrawal mechanism and a film support transport station, the protection film of predetermined die length will stretch and will be held by this. Next, align, advance a film withdrawal mechanism and a film support transport station, it is made to move to the upper part location of the car body which makes the position have stood by beforehand, and the protection film with which positioning was checked and which was made to carry out post-downward actuation, and was stretched and held among both is stuck on the roof of a car body, or a bonnet. After film attachment finishes, a film withdrawal mechanism and a film support transport station cancel film support, and go up, and a film withdrawal mechanism carries out retreat transit of them for it towards a film maintenance device for the following film cash drawer while a film support transport station carries out return retreat at a zero.

[0007]

[Example] Drawing 1 thru/or drawing 3 are the whole one example front views, whole top views, and whole side elevations of the protection film attachment equipment concerning this invention. This protection film attachment equipment consists of the film feed zone 1, the film maintenance device 2, the cut device 3, a film withdrawal mechanism 4, film support transport stations 5, and these drives fundamentally.

[0008] Along with the guide rail 6 of the set-up pair, the movable frame 7 which can go up and down is equipped with the film feed zone 1, and it is constituted so that the protection film F drawn from the original fabric roll R may be guided through guide-idler 8 group and a dancer roller device 9 and said film maintenance device 2 may be supplied by the horizontal position. Said movable frame 7 is connected with the end of the chain 11 by which winding up and volume lowering actuation are carried out by the motor 10, and the balance weight 12 is connected with the other end of this chain 11.

[0009] The up guide plate 13 by which holizontal-bridging immobilization was carried out in the anterior part of said movable frame 7 at the right-and-left horizontal as the film maintenance device 2 was shown in drawing 4 and drawing 5 , The swinging arm 15 which consisted of a lower movable guide plate 14 which counters this, and connected the lower movable guide plate 14 by carrying out a rocking drive in a cylinder 16 It is constituted so that the protection film F inserted in between the up guide plate 13 and the lower movable guide plate 14 may be pinched and fixed maintenance can be carried out horizontally. Moreover, as shown in drawing 6 , notching 17 is formed in first transition two or more parts of the up guide plate 13 and the lower movable guide plate 14, and it has become a film grip part by the film withdrawal mechanism 4 which this notching 17 mentions later.

[0010] The cut device 3 is arranged above the just before [first transition] part of the up guide plate 13 in the above-mentioned film maintenance device 2, and the lower movable guide plate 14, as shown in drawing 5 and drawing 6 . The belt 22 which equipped with the cutter holder 21 the movable base 19 in which level horizontal migration is possible possible [vertical movement] through the cylinder 20 along with the guide rail 18, and was connected with the movable base 19 by carrying out forward reverse drive rotation horizontally by the motor 23 It is constituted so that horizontal migration of the cutting edge 24 with which the cutter holder 21 was equipped may be carried out to right reverse.

[0011] Along with the beam 25 which extended in the shape of a cantilever, it is ahead equipped with the film withdrawal mechanism 4 and the film support transport station 5 possible [longitudinal slide movement] from said movable frame 7. Along with the guide rail 26 with which the inferior surface of tongue of a beam 25 was equipped, the film withdrawal mechanism 4 equips the movable oblong movable frame 27 with 3 sets of chucks 28 opened and closed up and down, and is constituted, and this chuck 28 is arranged corresponding to the notching 17 formed in first transition two or more parts of the guide plates 13 and 14 in said film maintenance device 2.

[0012] Moreover, along with said guide rail 26, the film support transport station 5 equips the chuck 30 of a Uichi Hidari pair opened and closed up and down in the movable oblong movable frame 29 possible

[an attitude right and left], and is constituted, and this chuck 30 is constituted so that the right-and-left edge of the protection film F pulled out by the film withdrawal mechanism 4 may be held.
[0013] In addition, said good repere mobiles 27 and 29 are connected with two belts (not shown) by which winding disposition was carried out into the beam 25, respectively, and the film withdrawal mechanism 4 and the film support transport station 5 can be **(ed) now independently by forward, on the contrary carrying out a rotation drive for each belt approximately. Moreover, it is elastically constituted by each chucks 28 and 30 possible [an attitude] so that the held protection film F may be stretched and can be had and supported.
[0014] The protection film attachment equipment of this example is constituted as mentioned above, and explains the film attachment actuation based on drawing 7 and drawing 8 below.
(1) First, draw the protection film F from the original fabric roll R, supply the tip to the film maintenance device 2, and carry out pinching immobilization between the up guide plate 13 and the lower movable guide plate 14. Moreover, the target car C is arranged in the lower part predetermined location of a beam 25. In addition, the inferior surface of tongue of the protection film F used here is an adhesive face.
[0015] (2) As shown in drawing 7 (a), carry out retreat migration (a drawing top shift to left) of the film withdrawal mechanism 4.
[0016] (3) As shown in drawing 7 (b), make it grasp the protection film F by the chuck 28 in 17 notching of the film maintenance device 2.
[0017] (4) As shown in drawing 7 (c), drop the lower movable guide plate 14, cancel film pinching, turn the film withdrawal mechanism 4 to a predetermined location, and advance it.
[0018] (5) If the film cash drawer of predetermined die length is completed as shown in drawing 8 (d) Raise the lower movable guide plate 14 and pinching immobilization of the protection film F is carried out again. While making it grasp the base right-and-left edge of the protection film F which was made to carry out opposite advance of each chuck 30 of the film support transport station 5 in a home position (method location of the leftmost), and was pulled out After dropping the cutter holder 21 of the cut device 3 from a protection film transit side to a lower part, advance transit of the movable base 19 is carried out, and the protection film F is cut crosswise between the film maintenance device 2 and the film support transport station 5. this -- the film withdrawal mechanism 4 and the film support transport station 5 -- ** -- in between, the protection film F of a predetermined dimension stretches and is held.
[0019] (6) Carry out alignment advance of the film withdrawal mechanism 4 and the film support transport station 5, and make it move above the car C which is standing by, as shown in drawing 8 (e).
[0020] (7) If positioning of the protection film F to Car C is made as shown in drawing 8 (f), the movable frame 7 is dropped, the alignment descent of the film withdrawal mechanism 4 and the film support transport station 5 will be carried out, and the protection film F stretched and given to the film withdrawal mechanism 4 and the film support transport station 5 will be stuck on the roof of Car C, or a bonnet.
[0021] (8) Next, after canceling a grip of each chucks 28 and 30 of the film withdrawal mechanism 4 and the film support transport station 5, while raising the movable frame 7 to the original height, make a home position carry out return retreat of the film support transport station 5.
[0022] Above, one attachment actuation is completed, the above-mentioned actuation is repeated the number of suitable times henceforth, and protection film attachment in the predetermined part of Car C is performed. After a protection film is stuck on Car C with above-mentioned attachment equipment, for example, when a rotation roller presses a film top with said rotation roller using the robot arm arranged elastically to a point, adhesion with a protection film and Car C is made perfect.
[0023] In addition, although the pinching method mechanical as a film fixed maintenance means in the film maintenance device 2 is adopted in the above-mentioned example, considering as a vacuum adsorption method is also possible. Moreover, it is also possible to carry out each chucks 28 and 30 of the film withdrawal mechanism 4 and the film support transport station 5 by the vacuum adsorption method. moreover, everything but the method with which the gestalt of the cut device 3 also makes it run the cutting edge 24 of immobilization -- a disk -- various cutting methods, such as a method which

makes it run a cutting edge, a shear method which makes it go up and down a broad cutting edge to a broad fixed fixed blade, and a heat ray cut method, can be chosen suitably, and can be carried out.
[0024]
[Effect of the Invention] According to this invention, without needing a help, it can be full automatic and the standard size cash drawer of a protection film, cutting, and attachment into a car body could be performed in high efficiency so that clearly from the above explanation.

[Translation done.]

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

TECHNICAL FIELD

[Industrial Application] This invention relates to the equipment which sticks a protection film on a roof, a bonnet, a trunk lid, etc. of a car, in order to avoid that surface coating receives damages, such as contamination by soot, dust, the iron powder rust, acid rain, etc., corrosion by ******, or an abrasion, during transportation until the completed car (mainly passenger car) passes into a user, and storage.

[Translation done.]

PRIOR ART

[Description of the Prior Art] Although it was common to have applied paraffin wax as a means to protect surface coating of a car temporarily, conventionally, when a protection feature removed not enough and paraffin wax, the organic solvent was needed, development of a new safeguard is desired from the reasons of it being necessary to correspond to wastewater regulation of a removal facility etc., and the protection film stuck on the painted surface of a car came to be developed corresponding to such a request.

[Translation done.]

* NOTICES *

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EFFECT OF THE INVENTION

[Effect of the Invention] According to this invention, without needing a help, it can be full automatic and the standard size cash drawer of a protection film, cutting, and attachment into a car body could be performed in high efficiency so that clearly from the above explanation.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] although this protection film has an alike and high paint protection feature as compared with the conventional protective agent spreading, the total cost in which attachment and exfoliation can carry out easily, and include a removal routing is cheap and that practical effectiveness is great Since film attachment was what is depended on a help (four operators are specifically grasping and sticking the four corners of a film), film attachment workability became low.
[0004] This invention is made for the purpose of offering the equipment which can stick and process this protection film into a car body simply quickly in high efficiency.

[Translation done.]

MEANS

[Means for Solving the Problem] In order to attain the above-mentioned purpose, this invention takes the following configurations. Namely, the protection film attachment equipment to the car concerning this invention The tip of the protection film drawn from the original fabric roll The film maintenance device which can be held horizontally, The film withdrawal mechanism pulls out horizontally and it runs by the chuck in support of the tip of the protection film held by the film maintenance device, While supporting the base of the pulled-out protection film by the chuck, a film withdrawal mechanism and the film support transport station it can run in this direction, It comes to equip the elevator style which makes it go up and down the cut device in which the protection film by which cash-drawer support was carried out is cut crosswise between a film maintenance device and a film support transport station, and the film withdrawal mechanism which stretched and had the cut protection film and a film support transport station.

[Translation done.]

EXAMPLE

[Example] Drawing 1 thru/or drawing 3 are the whole one example front views, whole top views, and whole side elevations of the protection film attachment equipment concerning this invention. This protection film attachment equipment consists of the film feed zone 1, the film maintenance device 2, the cut device 3, a film withdrawal mechanism 4, film support transport stations 5, and these drives fundamentally.
[0008] Along with the guide rail 6 of the set-up pair, the movable frame 7 which can go up and down is equipped with the film feed zone 1, and it is constituted so that the protection film F drawn from the original fabric roll R may be guided through guide-idler 8 group and a dancer roller device 9 and said film maintenance device 2 may be supplied by the horizontal position. Said movable frame 7 is connected with the end of the chain 11 by which winding up and volume lowering actuation are carried out by the motor 10, and the balance weight 12 is connected with the other end of this chain 11.
[0009] The up guide plate 13 by which holizontal-bridging immobilization was carried out in the anterior part of said movable frame 7 at the right-and-left horizontal as the film maintenance device 2 was shown in drawing 4 and drawing 5 , The swinging arm 15 which consisted of a lower movable guide plate 14 which counters this, and connected the lower movable guide plate 14 by carrying out a rocking drive in a cylinder 16 It is constituted so that the protection film F inserted in between the up guide plate 13 and the lower movable guide plate 14 may be pinched and fixed maintenance can be carried out horizontally. Moreover, as shown in drawing 6 , notching 17 is formed in first transition two or more parts of the up guide plate 13 and the lower movable guide plate 14, and it has become a film grip part by the film withdrawal mechanism 4 which this notching 17 mentions later.
[0010] The cut device 3 is arranged above the just before [first transition] part of the up guide plate 13 in the above-mentioned film maintenance device 2, and the lower movable guide plate 14, as shown in drawing 5 and drawing 6 . The belt 22 which equipped with the cutter holder 21 the movable base 19 in which level horizontal migration is possible possible [vertical movement] through the cylinder 20 along with the guide rail 18, and was connected with the movable base 19 by carrying out forward reverse drive rotation horizontally by the motor 23 It is constituted so that horizontal migration of the cutting edge 24 with which the cutter holder 21 was equipped may be carried out to right reverse.
[0011] Along with the beam 25 which extended in the shape of a cantilever, it is ahead equipped with the film withdrawal mechanism 4 and the film support transport station 5 possible [longitudinal slide movement] from said movable frame 7. Along with the guide rail 26 with which the inferior surface of tongue of a beam 25 was equipped, the film withdrawal mechanism 4 equips the movable oblong movable frame 27 with 3 sets of chucks 28 opened and closed up and down, and is constituted, and this chuck 28 is arranged corresponding to the notching 17 formed in first transition two or more parts of the guide plates 13 and 14 in said film maintenance device 2.
[0012] Moreover, along with said guide rail 26, the film support transport station 5 equips the chuck 30 of a Uichi Hidari pair opened and closed up and down in the movable oblong movable frame 29 possible [an attitude right and left], and is constituted, and this chuck 30 is constituted so that the right-and-left edge of the protection film F pulled out by the film withdrawal mechanism 4 may be held.

[0013] In addition, said good repere mobiles 27 and 29 are connected with two belts (not shown) by which winding disposition was carried out into the beam 25, respectively, and the film withdrawal mechanism 4 and the film support transport station 5 can be **(ed) now independently by forward, on the contrary carrying out a rotation drive for each belt approximately. Moreover, it is elastically constituted by each chucks 28 and 30 possible [an attitude] so that the held protection film F may be stretched and can be had and supported.
[0014] The protection film attachment equipment of this example is constituted as mentioned above, and explains the film attachment actuation based on drawing 7 and drawing 8 below.
(1) First, draw the protection film F from the original fabric roll R, supply the tip to the film maintenance device 2, and carry out pinching immobilization between the up guide plate 13 and the lower movable guide plate 14. Moreover, the target car C is arranged in the lower part predetermined location of a beam 25. In addition, the inferior surface of tongue of the protection film F used here is an adhesive face.
[0015] (2) As shown in drawing 7 (a), carry out retreat migration (a drawing top shift to left) of the film withdrawal mechanism 4.
[0016] (3) As shown in drawing 7 (b), make it grasp the protection film F by the chuck 28 in 17 notching of the film maintenance device 2.
[0017] (4) As shown in drawing 7 (c), drop the lower movable guide plate 14, cancel film pinching, turn the film withdrawal mechanism 4 to a predetermined location, and advance it.
[0018] (5) If the film cash drawer of predetermined die length is completed as shown in drawing 8 (d) Raise the lower movable guide plate 14 and pinching immobilization of the protection film F is carried out again. While making it grasp the base right-and-left edge of the protection film F which was made to carry out opposite advance of each chuck 30 of the film support transport station 5 in a home position (method location of the leftmost), and was pulled out After dropping the cutter holder 21 of the cut device 3 from a protection film transit side to a lower part, advance transit of the movable base 19 is carried out, and the protection film F is cut crosswise by Hazama of the film maintenance device 2 and the film support transport station 5. this -- the film withdrawal mechanism 4 and the film support transport station 5 -- ** -- in between, the protection film F of a predetermined dimension stretches and is held.
[0019] (6) Carry out alignment advance of the film withdrawal mechanism 4 and the film support transport station 5, and make it move above the car C which is standing by, as shown in drawing 8 (e).
[0020] (7) If positioning of the protection film F to Car C is made as shown in drawing 8 (f), the movable frame 7 is dropped, the alignment descent of the film withdrawal mechanism 4 and the film support transport station 5 will be carried out, and the protection film F stretched and given to the film withdrawal mechanism 4 and the film support transport station 5 will be stuck on the roof of Car C, or a bonnet.
[0021] (8) Next, after canceling a grip of each chucks 28 and 30 of the film withdrawal mechanism 4 and the film support transport station 5, while raising the movable frame 7 to the original height, make a home position carry out return retreat of the film support transport station 5.
[0022] Above, one attachment actuation is completed, the above-mentioned actuation is repeated the number of suitable times henceforth, and protection film attachment in the predetermined part of Car C is performed. After a protection film is stuck on Car C with above-mentioned attachment equipment, for example, when a rotation roller presses a film top with said rotation roller using the robot arm arranged elastically to a point, adhesion with a protection film and Car C is made perfect.
[0023] In addition, although the pinching method mechanical as a film fixed maintenance means in the film maintenance device 2 is adopted in the above-mentioned example, considering as a vacuum adsorption method is also possible. Moreover, it is also possible to carry out each chucks 28 and 30 of the film withdrawal mechanism 4 and the film support transport station 5 by the vacuum adsorption method. moreover, everything but the method with which the gestalt of the cut device 3 also makes it run the cutting edge 24 of immobilization -- a disk -- various cutting methods, such as a method which makes it run a cutting edge, a shear method which makes it go up and down a broad cutting edge to a

broad fixed fixed blade, and a heat ray cut method, can be chosen suitably, and can be carried out.

[Translation done.]

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the whole one example front view of the protection film attachment equipment to the car concerning this invention.
[Drawing 2] It is the whole example equipment top view.
[Drawing 3] It is the whole example equipment side elevation.
[Drawing 4] It is the front view of an important section.
[Drawing 5] It is the side elevation of a film maintenance device and a cut device.
[Drawing 6] It is the important section perspective view of a film maintenance device and a cut device.
[Drawing 7] It is attachment processing process drawing.
[Drawing 8] It is attachment processing process drawing.
[Description of Notations]
2 Film Maintenance Device
3 Cut Device
4 Film Withdrawal Mechanism
5 Film Support Transport Station
28 Chuck
30 Chuck
F Protection film
R Original fabric roll

[Translation done.]